PART I

FOUNDATIONS

1. Research in the Real World

2. Theory, Models, and Research Questions

3. Qualitative Research

This first part of the book introduces you to research and its many uses in the real world, hopefully inspiring you to want to dig deeper and discover more. It also covers the theories, models, and research questions that guide researchers' thinking and that provide a foundation for creating and evaluating evidence. And this part of the book introduces you to qualitative research, which is an important starting point for exploring the social world as well as a useful method for developing theories, models, and research questions. Together, these chapters provide a foundation for understanding and applying research methods.

CHAPTER 1

RESEARCH IN THE REAL WORLD

Thousands of studies have looked at global warming.

LEARNING OBJECTIVES

After reading this chapter, you should be able to

- Recognize how research informs policy and practice
- Understand the character of research as a form of knowing
- Appreciate the limitations of research
- Distinguish causal and descriptive questions
- Describe key ethical principles of human subjects research

Overview: In this chapter, you will learn why research methods matter—not just for those who do research but for those who apply it to policy making, management, and other important decisions in life. Research provides a fact base for decisions and helps win arguments; and sometimes (if you're not careful), research misleads. Knowing research methods also provides a foundation for understanding performance measurement, program evaluation, analytics, big data, and the push for evidence-based policy and practice in many fields. You will see how descriptive ("what is") questions differ from causal ("what if") questions and what defines research and the scientific method more generally as a way of knowing about the world. And you will learn about the ethics of doing research with human participants—ethics that shape social and policy research. This chapter aims to expand your appreciation of research methods—and to help you approach the rest of the book with an open and informed perspective.

Do Methods Matter?

We want to do things in our lives and in our work to make a difference in the world—to educate children, treat or prevent sickness, reduce crime, promote the arts, develop innovative products, feed the hungry, house the homeless, satisfy clients, and improve our workplaces and our communities. We share a desire to do something meaningful, to leave our mark in the world. But doing so requires a base of evidence beyond our own personal knowledge and experience—evidence about how things really are and evidence about how to make things better.

We need such evidence not only to enhance our own understanding and decision making but also to convince others—those with the authority and resources that we need to accomplish our aims or those with opposing points of view who stand in our way.

Good Evidence Comes From Well-Made Research

The best evidence comes from good research. Good research can appear in the form of a study published in a journal, but it can also be an internal analysis of administrative data, a government or foundation report, a performance measurement brief, a program evaluation, a needs assessment, or a client or employee survey. Government agencies and international organizations collect and disseminate a great variety of empirical evidence on many important topics, such as health services and outcomes, educational attainment, labor market characteristics, crime victimization and punishment, housing conditions, environmental air and water quality, and so on.

Because of the internet and modern communications technology, we now live and work in a world in which an abundance of data, studies, and statistics surround us and hover within easy grasp—provided we know what to choose, how to make sense of it, and where to apply it.

Good research—just like a good car or a good piece of software—must be well designed and well made. But we cannot simply rely on brand names (although knowing that research comes from a respected scientific journal or reputable research institution does provide some assurance). Still, each study is unique, and each has its own strengths and weaknesses. So we need to understand how research is made—that is, research methods.

Research methods are the techniques and procedures that produce research evidence, such as sampling strategies, measurement instruments, planned comparisons, and statistical techniques. So we need to understand research methods to judge the quality of a study and the evidence it provides. Research methods are what this book is all about.

May the Best Methods Win

We also need an understanding of research methods to attack evidence that hurts our cause or defend evidence that helps it.

Consider the controversy over abstinence-only sex education for teenagers. Some communities feel strongly that teens should be discouraged as much as possible from engaging in sexual activity and that comprehensive sex education (which can involve distributing condoms and instructing teens in their use) sends the wrong signal. Others warn that the abstinence-only approach does little to change the reality of teenagers' lives, leaving them vulnerable to unwanted pregnancy and sexually transmitted diseases (including AIDS).

As is often the case with a controversial public policy issue, both sides can point to studies to bolster their arguments. A review by Douglas Kirby (2007) located 115 studies of various pregnancy prevention programs targeting U.S. teens, including abstinence and comprehensive programs. So neither side can win just by pointing to "*a* study" that supports its position.

Instead, we must struggle over how well made the conflicting studies are—meaning their methods. The argument may be won by having a better-made study—or lost by having a poorly made one. So although the war may start from a substantive policy disagreement, such as how best to provide sex education to teens, the battles often rage over research methods.

Research-Savvy People Rule

Some of you may be training to become researchers or analysts—so doing research will be (or already is) part of your job. Clearly, knowing research methods is important to you. But many of you are (or plan to be) practitioners, doers—implementing programs, delivering services, managing people, or leading organizations. Why do you need to know research methods? We've already suggested a few reasons: Good research provides a fact base for decisions and wins arguments, and the quality of research often hinges on the methods used. But knowing research methods can help your career more directly as well.

We live and work in an "information age" in which the ability to find, understand, and make use of complex sources of information—such as research—is an important skill. An explosion of data of all kinds—from governments, businesses, and virtually every other institution or activity in our lives—means that those who know how to handle, analyze, and interpret data have great value to organizations and employers. Organizations regularly generate analytics and commission studies, and so their top leaders or managers must know how to

make sense of and apply this information to improve policies and programs. Funding agencies and legislative bodies demand "evidence-based"—meaning research-based—programs and management reforms. To win funding for your program or organization, you need the ability to demonstrate an understanding of research in your field of policy or practice.

So without a grasp of research methods, you will be at a disadvantage in applying for jobs, advancing into leadership positions, and attracting financial and political support for your program or cause. With a good understanding of research methods, you can do more and go farther in your career.

Research, Policy, and Practice

Research has become an essential element of modern public policy and management in the form of analytics, performance measurement, program evaluation, and the push for evidence-based policy and practices.

Analytics

The term *analytics* is everywhere: "Google analytics," "business analytics," "urban analytics," and analytics for education, health care, human resource management, marketing, and other fields. Often people expect to see analytics in a dashboard or other visualization. For example, Figure 1.1 shows a coronavirus dashboard created by a team at Johns Hopkins University during the outbreak of the pandemic in Europe and the United States. Figure 1.2 shows a more everyday social media dashboard.
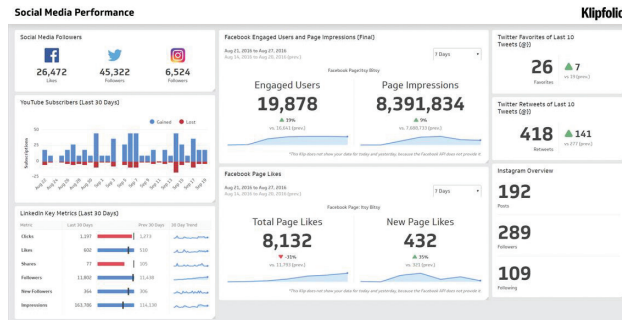
▼ FIGURE 1.1

Coronavirus Analytics Dashboard
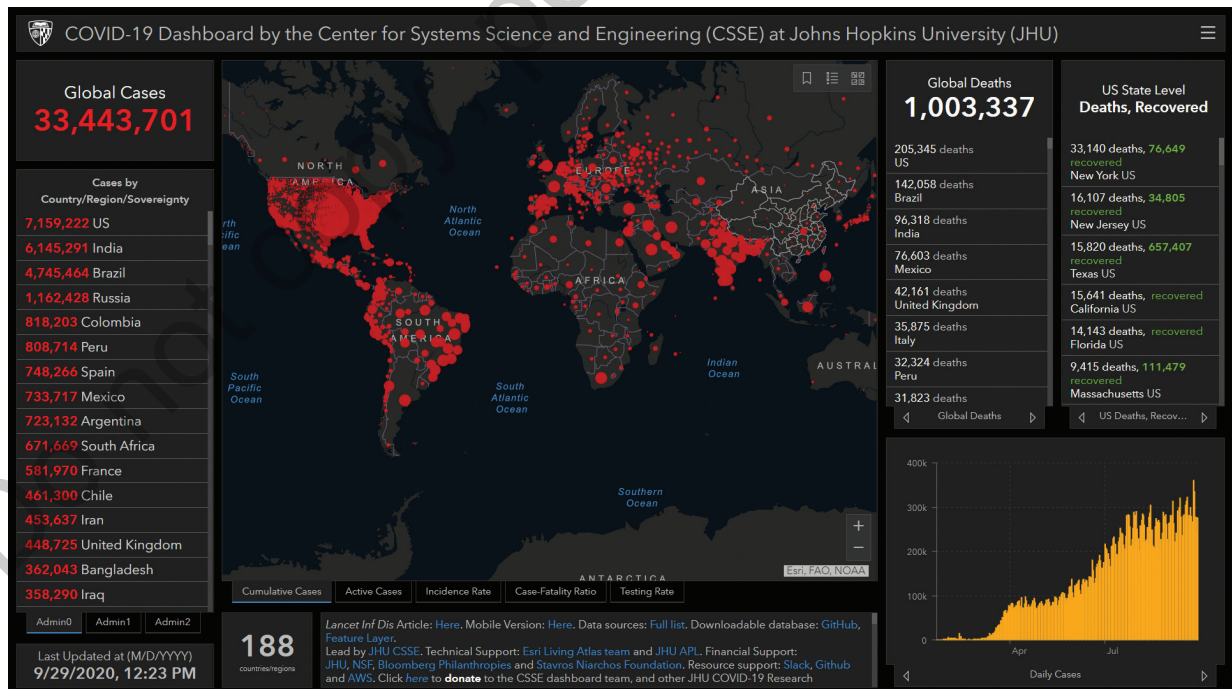
Source: Johns Hopkins University, retrieved from https://coronavirus.jhu.edu/map.html on September 29, 2020, at 1:30 PM EST, shortly after global deaths surpassed 1 million.

▼ FIGURE 1.2

Social Media Analytics Dashboard

Source: Klipfolio, retrieved from https://www.klipfolio.com/resources/dashboard-examples/social-media on March 24, 2020.

What are analytics—and how do they differ from more traditional research and analysis, the topic of this book? Although the term refers to a wide variety of things, **analytics** are usually real-time, frequently changing metrics and charts that describe an ongoing flow of activity or behavior, such as the coronavirus pandemic (Figure 1.1) or social media activity (Figure 1.2). The term also implies that the analytics—the numbers and charts—are displayed in ways that are readily available and useful for decision making. Analytics often appear intuitive and easy to use—no training required. But like more traditional research and analyses, analytics can be misinterpreted and may lead to wrong conclusions.

In this book, you will learn skills that can help you more effectively interpret and apply analytics on the job or in life. You'll learn how to judge when trends over time or differences between groups represent real changes rather than just a transient blip or random fluke. And you will see how to use analytics and other evidence to figure out what works—and how well it works. You may even get some ideas from this book that help you employ analytics software to configure better and more useful analytics dashboards for your own needs.

Performance Measurement

Many fields these days emphasize **performance measurement** and performance management. The idea is sensible: We should measure how well we're doing and ideally manage to improve it. New York City's CompStat program—a data-driven effort to map and track crimes and hold police commanders accountable—is a well-known example that has spread to other policy areas (Behn, 2014). Indeed, the push to measure performance is now big in education, business, health care, and many other fields. The mass of data available today, thanks to the information revolution, fuels this trend. Performance measurement has now become a pillar of contemporary policy and practice in the public and nonprofit sectors (Hatry, 2007; Kaplan & Harvard Business School, 2009; Poister, Aristigueta, & Hall, 2014).

In the following chapters, you will see how logic models can help you figure out what to measure. You will learn what makes for valid and reliable measurements. And you will be introduced to various sources of data to measure outputs and outcomes, including both existing data and original surveys. All this material is critical to understanding and implementing performance measurement and management.

Evaluation Research

Much **evaluation research** aims to answer these questions: Did a program or intervention have an impact? Did it improve or change things? Other program evaluations seek to describe or fine-tune the implementation of the program; these are referred to as process or formative evaluations. Evaluation research is now a standard requirement of most government or foundation grants and contracts. Most new policy or management initiatives demand some form of evaluation as well. So evaluation research, too, has become a pillar of contemporary policy making and management in the government, the nonprofit sector, and even the business world (Rossi, Lipsey, & Freeman, 2003; C. Weiss, 1997).

But how can we know if a program or initiative is having its intended effect? Later chapters will introduce you to the basic ideas involved in thinking about cause and effect. They will cover strategies for estimating causal effects, including the use of control variables, randomized experiments, and various forms of what are called natural and quasi experiments. These are the major strategies for conducting evaluations of program impact.

Evidence-Based Policy and Programs

As suggested earlier, governments, businesses, and nonprofit organizations increasingly favor evidence-based policies and programs—strategies that have proven their effectiveness with research. It's not enough anymore to have a few heartwarming testimonials or a plan that just looks good on paper. The trend toward evidence-based policy and practice now permeates many fields (Davies, Nutley, & Smith, 2000). The rigorous testing of nudges, which are light-touch interventions aimed at changing health, social, or economic behaviors (Thaler & Sunstein, 2008), is an important example. Political campaigns now make much use of data and evidence-based approaches to gathering votes (Nickerson & Rogers, 2014).

Due to limited resources, policy makers and practitioners must often choose between effective programs. Therefore, comparing the effectiveness of different programs is crucial, as is comparing *cost-effectiveness*—the outcome obtained relative to the cost of the program. Such comparisons require evidence about the magnitude of a program's effect—how large an influence a program has on the outcome.

The chapters that follow will give you tools to identify and assess evidence that supports or can improve your program or initiative. And they will help you understand how to produce good research evidence to support your aims.

Evidence Can Mislead

On top of all that we've mentioned so far about the importance of research methods, it can be embarrassing to be wrong—and sometimes, if you're not careful, evidence can mislead.

QUESTION

> What examples have you seen of performance measurement, program evaluation, or a focus on evidenced-based policy in your work or area of interest?

Misleading Measurements

No Child Left Behind (NCLB) was signed into law in 2002, setting in motion a wave of reform in schools all across the United States that became suddenly preoccupied with high-stakes testing, worried about closing the race gap, and apprehensive about the need to demonstrate rapid gains in test scores. NCLB won support in part because of the "Houston miracle," the fact that this large, diverse city had itself demonstrated remarkable gains in reading and math scores, especially for Black and Hispanic students—at least according to scores on the Texas Assessment of Academic Skills (TAAS). If Houston could do it, so could the rest of the nation.

But scores on another test—the Stanford Achievement Test—taken by the same Houston students during the same school years showed a much different picture, according to an analysis by the *New York Times* (Schemo & Fessenden, 2003). Scores on the Stanford test, which is used nationwide, showed little or no gain overall in Houston and little or no narrowing of the race gap. Several well-known experts in education statistics, asked by the *New York Times* to review the discrepancy, concluded that the TAAS had considerably overstated the progress made by Houston students. Standardized tests do not necessarily provide a consistent measure.

Misleading Samples

As Pennsylvania considered legalizing marijuana, a PoliticsPA.com (2019) poll asked its readers "Should PA legalize recreational marijuana?" Marijuana legalization has become a major public policy issue facing many states with important health and financial implications. Nearly 1,500 people responded to the poll, and the results showed that fully 90 percent favored legalization. But the PoliticsPA reader's poll relied on a voluntary sample—visitors to the online news site who found the poll and decided to participate.

Representative surveys show that a majority supports the legalization of marijuana.

A few weeks later, the Franklin and Marshall College Poll (2019) conducted a telephone survey that involved calling a random sample of 540 registered voters in the state. This poll found that only 59 percent favored marijuana legalization—a clear majority but still a finding that suggests a more divided view of the issue. Which survey do we believe? The Franklin and Marshall College Poll uses much better methods—including careful random sampling—to produce its results. And representativeness depends on the method of selecting the sample, not on how large the sample is. The true level of support for marijuana legalization in Pennsylvania is thus much closer to 59 percent than it is to the strikingly high figure of 90 percent, despite the larger sample in the PoliticsPA poll.

Misleading Correlations

A study of children less than two years of age found that those who slept with nighttime lighting were five times as likely to have myopia (nearsightedness) than those who slept in the dark (Quinn et al., 1999). In other words, the researchers found a correlation in their sample of small children between having night-lights and being nearsighted. Media articles reported on the study and suggested parents should stop using night-lights.

A later study, however, found that parents who themselves were nearsighted were more likely to use night-lights with their children, perhaps because of their own vision difficulties (Zadnik et al., 2000). If children inherit myopia from their parents and if parents with myopia are more likely to give their children night-lights, then the night-lights aren't causing the children to become myopic. This is an example of a **spurious relationship**: when two variables are correlated because both are a reflection of a third, underlying variable or common cause—in this case, the myopia of the parents. Thus, contrary to the media reports, the correlation is not a reason for parents to stop giving their children night-lights.

QUESTION

Can you think of any other examples of a misleading measurement, sample, or correlation?

What Is Research?

This book is about research methods—but what is research? We can define research as a social and intellectual activity that involves systematic inquiry aimed at accurately describing and explaining the world. But it helps to get a bit more specific.

Secondary and Primary Research

People often "research" a topic at the library or on the internet. Such information searches and syntheses are best referred to as **secondary research**—the search for published sources describing the results of research or information provided by others. While secondary research is an important skill that we cover in the last chapter (Chapter 17), it is not the focus of most of what we cover in this book, nor is it what we mean when we use the word *research*.

Rather, we use the term *research* to refer mostly to original research, or **primary research**—the original collection or analysis of data to answer a new research question or to produce new knowledge. In journals, such studies are referred to as original contributions. What gets confusing is that original or primary research can involve **primary data** collection—collecting *new* data to provide a description or explanation of the world. But it can also involve the original analysis of **secondary data**—data collected by others, such as existing government surveys, administrative records, or transcripts. Indeed, much primary research makes use of secondary data.

Unfortunately, the term *data* can also be a bit confusing. When we look up a few published facts or even a table of statistics online or in the library, we sometimes refer to this as finding "data" on a topic. But in this book, we use the term **data** to refer to largely unprocessed observations—a data set or raw data, they're sometimes called.

In your own words, explain the differences between primary and secondary research and between primary and secondary data.

It Comes in Various Shapes and Sizes

As you will see from the many examples throughout the chapters in this book, research comes in a surprisingly wide variety of shapes and sizes:

- Large-scale studies of broad populations
- Small-scale studies of one locally situated group
- Snapshots in time
- Studies of outcomes or events that occur over many periods of time
- Laboratory experiments
- Naturalistic observations of real-world settings
- Carefully planned interventions
- Formal modeling or theoretical analyses
- Opportunistic discoveries of unplanned events
- Simulations
- Informal research conducted for the purpose of organizational strategy or management

One of the important points to realize about research, and about researchers, is that inventiveness and creativity are an important part of the process. Good research often involves the imaginative application of new methods, innovative techniques, or clever strategies to learn about the world.

It's Never Perfect

Research, like everything else that is human, is not perfect—far from it. Every study has weaknesses, as you will see in this book. It is important to spot these shortcomings and understand their implications.

But it is also important not to discard a study entirely because it has some methodological or other shortcomings. We don't want to throw the baby out with the bathwater. Every study has strengths, too—or at least most studies do. There is often something to be learned from almost any study, and the perfect study is just not possible—especially in social and policy research. A good consumer of research can both spot the weaknesses and recognize the strengths.

It's Uncertain and Contingent

Many think of research as providing certain and universal conclusions. But research evidence often includes a large dose of *uncertainty*, typically expressed in the form of

probability statements or qualified conclusions. Thus, researchers talk about the results "indicating" this or that, "suggesting" that something is true, or showing that an outcome was "likely" due to a presumed cause. In part, this comes from the language of modern statistics, which uses the laws of probability to make inferences about unknown populations or causes. But this way of speaking and writing also reflects the inherent uncertainties involved in making firm statements or conclusions about complex human and public affairs.

Social and policy research is also **contingent**—bounded in space, time, and context. A study that finds evidence for the effectiveness of an education reform in one school district, for example, may not hold true in other districts with different children, teachers, budgets, and administrative structures. A mental health intervention that is shown to be effective with affluent suburban adults may not have the same effect on poor, rural adults living very different lives. The motivations found to encourage productivity in one organization may not be the same as the motivations that matter in another organization.

It Aims to Generalize

Generalizability is the ability to take the results of research and apply them in situations other than the exact one in which the research was carried out. Although we just noted that research is often contingent, researchers nevertheless strive at the same time to make their work generalizable. This is quite important: If the research results only apply in the exact setting (time, place, circumstances) in which the study was conducted, then they cannot be used to inform policies or practices in other situations.

For example, a study might examine a policy of requiring out-of-pocket payments for emergency visits to the hospital and find no impact on health outcomes for patients. But say the study is done using data from one insurance plan that covers mostly younger, healthy workers with good incomes. Do the results apply to insurance plans that cover older, less healthy individuals with low incomes? Probably not: Such individuals might well behave differently if required to make payments for their emergency visits. So the study has limited generalizability. We might even worry that the study is only relevant for that one particular insurance plan and the population it serves, making it of little use to anyone else. While generalizability is always a goal, real-world research is often less generalizable than we would like.

This is not to say that social and policy research has little to offer—on the contrary. But you do need to be realistic and appreciate the limits, as well as the rewards, of research.

Bits and Pieces of a Puzzle

For these reasons, a single study is almost never definitive; rather, empirical evidence on a topic is cumulative. Research produces a *body* of evidence, and researchers talk about arriving at a scientific *consensus* within the bounds of what is likely to be true (or not).

Consider global warming—is the world really heating up, and if so, is global warming natural or attributable to humans? There have been thousands of individual studies of various aspects of global warming over the years, from tracking the melting of the polar ice caps to observing animal species, mapping storms and rainfall, sampling the level of CO_2 and other greenhouse gases in the atmosphere, and so on. None of these studies alone definitively proves that human activity is causing the earth to get hotter—indeed, some contradict this hypothesis. To help establish a consensus—particularly given the monumental economic costs and political complexities involved in responding to global warming—the United Nations (UN) and the U.S. federal government each established

scientific panels to review the research evidence. The UN's Intergovernmental Panel on Climate Change (IPCC, 2019) concluded that "human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C" (p. 4).

The U.S. Global Change Research Program (2017) similarly found that "it is extremely likely that human activities, especially emissions of greenhouse gases, are the dominant cause of the observed warming since the mid-20th century" (p. 10). But to arrive at these conclusions took many years of research and thousands of individual studies—not to mention much political debate. And the process goes on.

The same kind of process of accumulating evidence, engaging in scientific debate, and searching for consensus characterizes most areas of research. Of course, most topics of research do not inspire as many studies or the establishment of large national or multinational scientific panels to search for a consensus. Nevertheless, something similar happens on a smaller, quieter scale in the various journals, research conferences, and institutions where studies on a topic are presented and debated. But consensus is not always, or even often, possible: Too much is unknown, and more research remains to be done.

QUESTION

Explain in your own words the meaning of generalizability.

It Involves Competition and Criticism

The process of research is also one of continual competition and criticism—the continuous testing of the consensus. There are researchers who doubt aspects of the human-made global warming hypothesis, for example, and they are busy conducting and gathering evidence to challenge, or at least refine, the consensus. Conclusions that withstand this kind of competitive onslaught become what we consider to be established knowledge (for the time being).

The formal expression of this critical attitude is the process of **peer review**. Most research journals, as well as research funding programs, use a peer-review process in which the studies or proposals are reviewed and approved (or rejected) by a group of peers—other researchers in the same field—who render a judgment on the methods and worth of the paper or proposal. This process is usually blind (neither the researcher nor the reviewer knows who is who) to rule out favoritism and to encourage reviewers to be honest and forthright in their criticism. You, too, should think in this honest, critical way as you hear or read about research (although, of course, sometimes even the best and most experienced researchers struggle to keep an open mind).

It Can Be Quantitative, Qualitative, or a Mix of Both

Much research involves numerical measurement and statistics, but research can also involve language, images, and other forms of expressing meaning that researchers then interpret. The former is referred to as quantitative research; the latter, as qualitative research. Qualitative studies involving the interpretation of language can be done rigorously—despite the lack of scientific-looking tables and formulas. Numbers do not make a study good or scientific.

Social and policy research also uses mixed methods that combine the advantages of both quantitative and qualitative techniques. Because social phenomena are so difficult to pin down, researchers often use multiple methods to confirm a finding, a process sometimes referred to as triangulation.

Although most of the chapters in this book are devoted to topics typically thought of as part of quantitative research, we discuss the role and contribution of qualitative research in all of the chapters. And we devote an early chapter (Chapter 3) specifically to qualitative research because we consider it to be foundational. In an important sense, good quantitative research is based on good qualitative research. The two perspectives enhance one another.

It Can Be Applied or Basic

Research can be *applied*—done because we have a practical need to know. For example: How many people are currently unemployed? Would smaller classes improve learning? Does adding police officers reduce crime? **Applied research** typically has direct implications for policy and practice. Many of the examples in this book focus on applied research.

But research can also be *basic*—the pursuit of knowledge for its own sake rather than because of an immediate practical need. **Basic research** in a given field also tends to focus on more abstract or fundamental processes of nature or society. For example, we might be interested in studying how people make decisions involving uncertainty, how the human body responds to long-term exposure to stress, how children acquire a language, or the evolutionary basis of human cooperation. Basic research also advances policy and practice by providing a solid foundation of knowledge. But the link is less direct.

Descriptive and Causal Research

Research sometimes aims simply to describe the world—how things are. At other times, its goal is to provide a causal explanation—how would things be different if we changed something? This basic distinction is fundamental to thinking about and conducting research and provides a road map of sorts for the rest of this book.

QUESTION

In your own words, describe some of the defining characteristics of social science research.

Description: What Is the World Like?

Concern about autism has been growing for some time, and parents and other advocates have pressed for services to help autistic children and for more research about the disease. In evaluating how to react to autism, policy makers and practitioners need to know how many people (and particularly children) with autism there are in the population. They need to know if the rate of autism is growing—and, if so, how quickly. They need to know whether autism is more concentrated in certain places or groups in the population. They need to know the severity and forms of autism. In other words, policy makers and practitioners need a good *description* of autism to address the problem.

The goal of **descriptive research** is to paint an accurate picture of the way the world is. Descriptive research includes describing just one variable—such as the rate of autism in the population. It also includes describing **relationships**—how two different variables are related (see Chapter 2). Relationships are often referred to as associations or correlations. For example, autism rates have been growing, so time and autism are related. Or at least it seems so—researchers worry that perhaps we have simply gotten better over time at identifying people with autism and that this enhanced ability to identify the disease accounts for the upward trend. Autism and geographical region are also related—the disease is more common in California, for example, than in other parts of the United States. But it turns out that this description is not so certain—perhaps autism is not consistently identified everywhere. Descriptive research can be harder than you might expect.

Before figuring out what to do about a problem like autism, the problem must be described. Knowing the lay of the land is important before deciding where to go. But once practitioners have described the problem, the task of tackling and solving it has just begun. After all, we want to figure out how to make things better—not just sit around and watch things happen. In the case of autism, policy makers and practitioners want to figure out how to prevent and hopefully cure, or at least ameliorate, the disease.

Causation: How Would the World Be Different If Something Changed?

The goal of **causal research** is to answer "what if" questions, to find out how to make things happen. Specifically, causal research asks, If we change something, will other things (outcomes we care about, such as autism) change in response? And if they do change, by how much?

For example, what happens to the risk of autism if parents wait until they are older to have children? Would the risk change at all? If so, by how much? More generally, we want to know what factors have caused the growth of autism over time (if indeed the trend is real and not just an artifact of better identification techniques).

Descriptive and causal research are both important in practice, but answering causal questions is especially central to the work of practitioners. Public policies, social programs, and management initiatives aim to do things—to make something happen. So answering questions such as "What will happen if we do X?" is essential.

Description of a Correlation Is Not Proof of Causation

It is easy to confuse correlation, the description of a relationship, with causation. If more educated mothers are more likely than less educated mothers to have children with autism—a correlation—then it is easy to conclude that something about educated mothers causes autism. However, that may not be so. Think about the earlier example of nightlights and nearsightedness in young children. When researchers, policy makers, or practitioners naively assume that a correlation implies causation, grave errors can be made.

For example, because autism rose over the same period that vaccine use rose and because autism symptoms start at about the same time that toddlers receive many vaccines, people began to suspect that vaccines cause autism. Some parents even started to reject vaccines, resulting in outbreaks of previously suppressed illnesses. In fact, there is no evidence that vaccines cause autism and, indeed, significant evidence that they do not (CDC, 2020b).

One of the most important skills you will gain from this book is how to distinguish a correlation, the description of a relationship, from evidence of a causal effect. And you will learn how to better judge good causal evidence of what works, and how well it works.

Because distinguishing description from causation is so important, we have organized this book around that distinction. Part II of the book covers strategies for description while Part IV covers strategies for causation. We will stress again and again the distinctions between description and causation and between correlation and causation. We will also emphasize the many strategies and techniques for drawing causal conclusions, especially for learning what kinds of programs work and how well they work.

QUESTION

> What is the difference between descriptive and causal research?

Epistemology: Ways of Knowing

How much do you weigh? How do you *know* that's how much you weigh? Probably you used a scale and remember the result. You measured your weight—an elementary act of research. How high is Mount Everest? If you know, how do you know? Did you measure it? If you don't know, how might you try to learn how high Mount Everest is? You will probably turn to other sources, perhaps searching the internet and examining a website that you trust (secondary research). But of course, you should consider how the website got its information.

We have many ways of knowing—what philosophers of science call **epistemologies**. Sometimes we directly learn something ourselves. But we can't do that about most things in the world. Often, we just accept what some trusted authority says is true. Sometimes, we rely on knowledge that comes from our cultural or religious traditions. We know other things through intuition or common sense.

The Scientific Method

There are many ways of knowing things, but in modern society the scientific method is a privileged way of knowing. Most of the ideas and techniques presented in this book are based on the scientific method.

Obviously, you cannot directly research everything you need to know on your own. So this book will teach you not only how to do research but how to critically assess and make use of the research produced and published by others. It will also help you judge knowledge that comes from authority, tradition, and common sense more effectively by using the standards of the scientific method.

The **scientific method** can be defined as an approach to acquiring and correcting our knowledge about the world. It has several key characteristics:

- Systematic observation—or measurement of various features or behaviors in the world (including qualitative observation).

- Logical explanation—in the form of a theory or model that makes sense according to basic rules of logic and accepted facts.

- Prediction—in the form of a hypothesis, based on a theory, of what we will observe if the theory is true. (This is seen as superior to after-the-fact, or ex post facto, explanations, which are not falsifiable.)

- Openness—meaning the methods used to produce evidence are clearly documented and made available for review. This allows for replication—repeating the study to see if the results hold (and in what contexts).

- Skepticism—researchers scrutinize and critique each other's work, a process referred to as peer review, in search of possible shortcomings or alternative explanations.

In sum, the scientific method is a privileged form of knowing because it is generally transparent, logical, and fact based. But scientific evidence can be misrepresented or misused, so you still need to question scientific knowledge just as you would question common sense, tradition, or authority. There are also varying understandings of what constitutes the scientific method, and this understanding has changed over time and across scientific fields (Godfrey-Smith, 2003).

Are There Objective Truths in Social Science?

The scientific method originated with the natural sciences. Newton's physics, Galileo's astronomy, Lavoisier's chemistry, and Mendel's genetics are early examples. But the social world is different from the physical or biological worlds due to factors such as human consciousness, culture, history, and politics. And social phenomena vary by place and time much more than do physical or biological phenomena.

As a result, knowledge produced by the social sciences, such as how markets work or how children learn, is more contingent and less generalizable than is knowledge produced by the natural sciences. Moreover, how we interpret social phenomena is shaped in part by language and culturally constructed categories. These categories even influence the kinds of social objects or actions we observe, and our social constructions also vary from time to time, from culture to culture, and from political perspective to political perspective. So even when we try to be objective, our interpretations will be influenced by our categories of subjective experience and judgment.

Because social ideas and facts are constructed in this way, some people reject the relevance of the scientific method to the study of society and public policy. Indeed, others reject the idea that an objective truth, even a contingent truth, exists for social phenomena outside of our various subjective, socially constructed vantage points. This skeptical view is generally referred to as *antipositivism* because it is opposed to so-called **positivism**, the approach of social researchers who pattern their work after the natural sciences. However, positivism has a more precise meaning in the philosophy of science, where it refers to a rather strict form of empiricism (such as behaviorism in psychology). We acknowledge that ideas and even observations about social phenomena are inevitably influenced by social constructions, particularly by history and culture. Nonetheless, we believe that the scientific method, broadly defined, provides the most pragmatic approach to understanding and solving many of the pressing social problems we face today.

Our perspective in this book can be described generally as **scientific realism** (Bunge, 1993; Godfrey-Smith, 2003): "realism" because we believe that the social world,

although profoundly shaped by human history and culture, is still part of an objective reality that exists outside of our thoughts and perceptions, and "scientific" because we believe it is possible to use the scientific method—or methods modeled on the scientific approach—to learn about and understand the social world.

Induction and Deduction

There are several ways in which researchers employ the scientific method to tackle a problem or curiosity, as illustrated in Figure 1.3. One approach is to begin by doing systematic observation of the world and then developing a logical explanation (theory) to account for what is seen—an approach referred to as **induction**. In anthropology, for example, researchers typically observe people in a community for some time before developing an explanatory theory. Qualitative research, described in Chapter 3, is often inductive. Induction also happens in quantitative research when many possible relationships between variables are explored before an explanatory theory emerges from the observed patterns. With the proliferation of data, including big data, inductive research has grown.

The other approach is **deduction**: The researcher moves straight to the development of a logical explanation or theory and only later gathers evidence to test the theory. For example, rational choice theorists in economics and other fields approach many problems with the fundamental assumption that people or institutions will seek to maximize their gains and minimize their losses. Starting from this assumption, they then generate hypotheses and predictions about not only economic decisions but also such things as racial discrimination, marriage, and voting (Becker & Becker, 1998). In social research, some researchers called **structuralists** insist that social research must always start with theories and test these with empirical predictions.

Most researchers, however, practice a combination of induction and deduction. They have a theory in mind, gather data to test it, but then explore the data to refine their theory or even develop new theories.

Proof Requires Fresh Data

While most researchers practice a combination of induction and deduction, even in a single study, the structuralists have a point that applies broadly in research: *Data cannot be used to both develop a theory and definitively confirm it.*[1] Fresh data are required to truly test a theory or support a hypothesis. Think of your favorite detective novel. Detective X uses induction to come up with a theory of the crime that fits all the existing clues. The theory suggests some previously unknown and unsuspected fact—red clay on the perpetrator's shoes, for example. If the prediction matches the fact, the perpetrator's guilt appears much more likely. Prediction provides powerful proof.

In social and policy research, some studies strive to generate theory while others aim to test theories. Research is often an iterative process in which deduction and induction alternate (as Figure 1.3 illustrates).

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[1]We cover this issue in more detail in Chapters 9 and 10.

Induction and Deduction
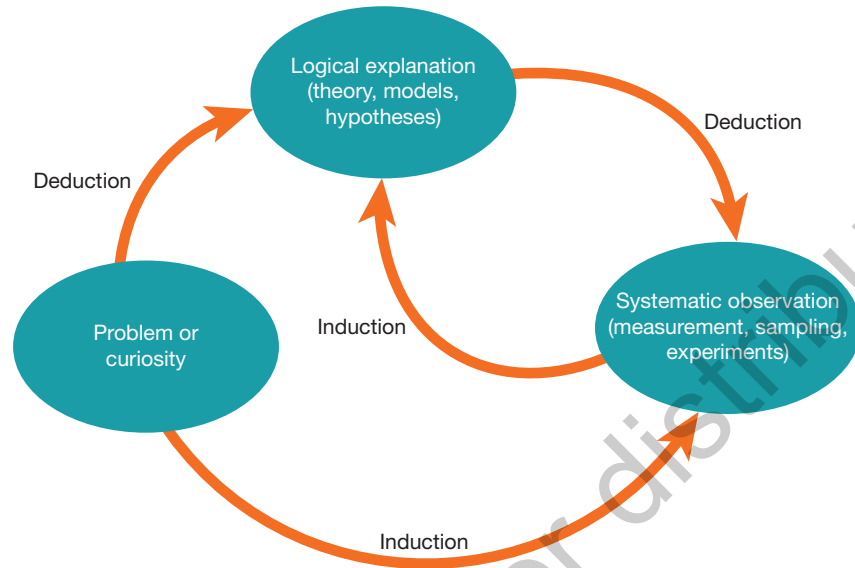
Approaching Research From Different Angles

You may encounter research from various angles: as a consumer of research findings in news articles, government reports, or journal articles; as someone who commissions research to satisfy a pressing information need; or as someone who conducts research on your own or as part of a team. This book addresses all of these perspectives.

Consuming Research

Research appears in many forms—in journal articles, government reports, foundation or advocacy publications, analytics dashboards, articles posted on the internet, blogs, and various summaries in print and electronic news media. An important goal of this book is to help you become a better consumer of research evidence—to take what's valuable and useful from available research and apply it to the task of solving important problems and improving people's lives. We hope that this book sparks your curiosity about what's out there ("I wonder if someone has done a study about . . .") and that it gives you the skills and confidence to go directly to the source. There is much to learn from reading an original study (even though such research is not always written in a very user-friendly style, something researchers need to work harder at, in our view).

QUESTION

> Describe in your own words some of the key characteristics of the scientific method.

Many of you are members of or will join professional associations—in public administration, education, management, public health, finance, social work, criminal justice, urban planning, or other fields. As members, you may receive research journals in your field. Through your association or employer, you also may have online access to relevant research journals. And there is a growing movement toward open-access journals—online journals that are freely available to the public. Governments and other organizations often post their research reports online. So getting access to original studies in your field is becoming increasingly trouble free. The only hindrance is your own willingness and ability to read, understand, and apply what's in these research journals. We hope that this book helps you do that.

Frequently, you'll come across the results of research—not in academic journals or in research reports but on social media, news reports, popular books, pod casts, TED Talks, or other sources. Often summaries leave out a lot, and some even make mistakes. Journalists have an interest in getting readers' attention and consequently sometimes exaggerate or sensationalize results. Good journalists, however, clearly and accurately explain research—a valuable service to society. Advocates and salespeople also use research to promote their causes or products. They have a clear incentive to exaggerate some results and neglect others. The tools that you'll learn in this book will help you critically examine accounts of research by journalists, advocates, or advertisers. And if you aspire to be a part of the media, this book will give you the tools to describe research accurately to your audience.

Commissioning Research

Policy makers, practitioners, and managers often have important research questions that have not been addressed in prior studies or analyses. So they need to commission research from internal staff or outside consultants.

An understanding of research methods is essential for all phases of this task. You need to adequately frame the initial research question and discuss it with the research team. You need to approve the team's proposal or work plan, for example how it will sample, measure, and draw analytical conclusions to help answer your question. As the client, you will be called on to make decisions or sign off on changes as the research unfolds (nothing ever goes perfectly as planned). You will be the main reviewer of briefings, draft reports, or analytics. And most likely you will participate in the presentation of the final research results in meetings with organizational leaders, in testimony before legislative bodies, or in press conferences with the media.

Who is selected to do the research will, of course, have a critical influence on its quality—so hire or choose your research team wisely. But you, as the client who commissioned and managed the research in the first place, are just as important a part of the process. This book will help you become a better purchaser and manager of research.

Conducting Research

When we think of a researcher, we tend to envision a professor in a university or a white-coated scientist in a laboratory. If this is your calling, then of course you must know research methods especially well. Indeed, a solid grasp of research methods can help new scholars or scientists become more productive, succeed at publishing, and participate more fully in their chosen fields.

But not everyone who conducts research these days fits this traditional mold. On the contrary, increasingly, applied research of various kinds is being conducted in large and small government agencies, nonprofit organizations, businesses, foundations, advocacy groups, the news media, and a growing industry of consulting firms that support the research needs of public, nonprofit, and business organizations. Some of these applied researchers have PhDs or other doctoral degrees, but many do not. Indeed, there are quite a few master's and even undergraduate programs that provide research and analysis skills sufficient to begin a career as an applied researcher or policy analyst.

Moreover, there are many situations in which practitioners engage in informal research. Examples include doing your own survey of employees or clients; tracking outcomes using analytics or performance metrics; examining the effectiveness of a new program or management initiative using administrative data; and doing qualitative interviews or focus groups for purposes of internal strategy, marketing, or decision making. These activities are research, too, even though the people doing them do not aim to publish in peer-reviewed journals or release results in official research reports. Knowledge of research methods can dramatically improve one's ability to do informal research well.

Ethics of Research

Social and policy research raises important ethical issues because it deals with human beings—their health, living conditions, rights, and well-being. These ethical concerns shape and constrain the design and conduct of research in ways that have implications for most of the research methods you will learn about in this book.

Poisoned by New York's Best Restaurants

In an effort to study how firms deal with customer complaints, a professor of business at Columbia University sent the same complaint letter to 240 fine restaurants in New York City (Kifner, 2001; Sieber & Tolich, 2013, p. 149). The letter claimed that he had just dined at the restaurant with his wife, a special anniversary dinner, only to spend the night suffering from the symptoms of food poisoning. "Our special romantic evening became reduced to my wife watching me curl up in the fetal position on the tiled floor of our bathroom between rounds of throwing up," the letter complained (Kifner, 2001). The letter also noted that the writer had no desire to contact regulatory agencies but only wrote "in anticipation that you will respond accordingly" (Sieber & Tolich, 2013, p. 149). Many of the restaurateurs who received the letter were dismayed and distraught, believing they were responsible for a grave error that could ruin their reputations and even put them out of business. Some restaurant employees were fired. When it turned out that the letters were faked, as part of a study, the restaurateurs were outraged at the researcher and the university and later even tried suing for damages (Fried, 2004).

Was the food poisoning research unethical? If so, why? Did it matter that the restaurateurs never willingly agreed to participate, that they were deceived, or that they suffered emotional distress? Does the value of the research—to understand better how businesses respond to customer complaints—make this study more or less ethical? Does it matter whether or not an alternative, less risky approach to the same research question was possible?

From a legal perspective, the courts found no financial damage to the restaurants, although they did find potential for emotional distress. Most of the court cases were dismissed (Fried, 2004), and the remaining ones were presumably settled. Still, the university had to apologize profusely and the professor was sanctioned for failing to follow the

university's procedures for human subjects research. The university reacted by providing all business professors with the same training and information about ethical human subjects research that it routinely required of biomedical researchers and many social scientists.

This example clearly illustrates that researchers these days cannot just go out and do any study that they want to, that there are ethical rules and limitations on their research. But what are these principles and procedures of ethical human subjects research, and what are their origins?

History of Human Subjects Abuses in Research

The history of research involving human beings includes many instances of unethical practices, sometimes extremely troubling practices. Early medical experiments were performed on prisoners, racial minorities, or poorhouse residents, often without their consent or even knowledge. During the Nuremberg trials, it was revealed that the Nazis had a program of profoundly inhumane medical experiments on Jews imprisoned in concentration camps during World War II.

In the United States, the U.S. Public Health Service ran the notorious Tuskegee syphilis study from the 1930s through to as late as the early 1970s. In the study, researchers recruited African American subjects (mostly poor sharecroppers) with late-stage syphilis into the study and then followed them for many years to observe the course and consequences of the disease. The participants were never treated for the disease, suffered painful and debilitating symptoms, and eventually died from the disease (Jones, 1993).

Many of the most egregious abuses of human research subjects occurred in biomedical research, and, as a result, early regulations stemmed from these cases (Israel & Hay, 2006, p. 40). However, ethical concerns have been raised by research in the social sciences as well, particularly with regard to social experiments. In Stanley Milgram's (1974) obedience-to-authority studies of the 1960s, subjects were asked by an authority figure (the experimenter) to give (phony) electrical shocks to another individual (an actor) strapped to a chair. Some subjects complied with the request to the point of administering what they believed were fatal shocks to the man in the chair—a disturbing experience for someone who simply agreed to participate in a campus psychology experiment.

Milgram's experiment became an emblem of the ethical problems that can arise in social experiments. Sieber and Tolich (2013, pp. 52–57), however, note the important insights from Milgram's experiment and wonder whether the strong condemnation of it was due less to the deception, which is not necessarily unacceptable, and more to the unpleasant truths it revealed about ordinary Americans. They argue that the experiment could have been made ethically acceptable with modifications, for example allowing disturbed subjects to withdraw at some point rather than repeatedly saying, as was done, that "the experiment must go on."

Some nonexperimental social science studies were also controversial. In 1966/67, Laud Humphreys (1975) investigated impersonal male-male sexual activity in public toilets by serving as a lookout (a participant observer). He then surreptitiously followed participants to their cars, noted their license plate numbers, looked up their addresses, and then later interviewed them in their homes, pretending they had been randomly chosen. Humphreys discovered that many of the men outwardly lived as married heterosexuals, and he gained valuable insights into their motivations, attitudes, and complex identities. But Humphreys was heavily criticized for ethical lapses, and he even lost his job as a result. Sieber and Tolich (2013, p. 69),

however, argue that Humphreys's research, like Milgram's, revealed information that would be hard to learn in other ways and that it was more ethical and respectful of its participants than is often assumed. (Humphreys himself was gay and a pioneer in the sociological study of sexual identity.) As in Milgram's work, the fact that the findings of Humphreys's study were disturbing to many people played a role in the ethical backlash against it.

Whatever the ethical drawbacks of particular pieces of social science research in the past, the potential for abuse was perhaps greater then because researchers worked without clear ethical guidelines or procedures for the review and approval of the ethics of their studies. Where did the principles and procedures that shape current social and policy research come from?

Principles of Ethical Research Emerge

The abuses of biomedical research drove the establishment of the first formal principles for ethical human subjects research. The Nuremberg Code of 1947, stemming from the trial of Nazi doctors and scientists, outlined various principles of ethical conduct in research, among them informed consent, voluntary participation, no harm to subjects, beneficence, and justice.

The 1964 Declaration of Helsinki of the World Medical Association adopted the same key principles, which have now become the foundation of contemporary research ethics in most countries around the world.

The Tuskegee syphilis study had serious ethical problems.

The outrage in the United States over the Tuskegee syphilis study, together with an influential publication showing widespread violations of the Nuremberg Code in medical research (Beecher, 1966), led to the Belmont Report[2] of 1979, which provided the framework for current U.S. ethics regulations (known as 45 C.F.R. Part 46). These regulations require the establishment of institutional review boards (IRBs) composed of researchers and laypeople who review and approve the ethics of all federally funded research involving human subjects. Among other requirements, approved research must satisfy principles summarized by three standards:

- **Respect for persons** dictates that people used as the subjects of research provide informed consent and are not coerced into participating in research.

- **Beneficence** dictates that people who participate in research are not harmed and, indeed, that they should realize some benefit from the research.

- **Justice** requires consideration of equity among subjects and fairness in regard to who becomes a research subject.

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[2]The Belmont Report is available from the U.S. Department of Health and Human Services at www.hhs.gov/ohrp/human-subjects/guidance/belmont.html.

Several Commonwealth countries, particularly the United Kingdom, Canada, Australia, and New Zealand, as well as many Western European countries, developed ethical principles and procedures similar in many ways to those of the United States (Israel & Hay, 2006). Certainly all of these countries and others now have ethical review organizations like U.S. IRBs, although not all countries regularly make social research subject to formal ethical oversight. Still, approaches to regulating research ethics do vary across countries, particularly in whether the approaches are top down, as in the United States, or more bottom up, as in the United Kingdom.

What Constitutes Informed Consent and Voluntary Participation?

Although ethical principles and procedures have been established across the globe, deciding the ethical standards in particular research situations is not always clear. Consider the example of informed consent, which requires not only understanding what the research entails but being competent to give informed consent (Faden & Beauchamp, 1986). So there can be tension between providing full information about the research procedure and doing so in a way that subjects can genuinely understand. Studies have shown that comprehending many informed consent forms requires a high reading level (Israel & Hay, 2006, Chapter 3). Language and cultural barriers can also complicate genuine understanding. And consider the issue of data gathered for nonresearch reasons, such as administrative records or data about people's online behavior. Is informed consent required to use such data for research?

Ethical guidelines require that participation in a study should be voluntary, but what this means is not always clear, particularly when people have limited power or choices in their lives. For example, Fontes (1998; cited in Israel & Hay, 2006, p. 65) describes two conflicting views about the use of incentives in research on Brazilian street children: Offering to pay the children to participate is potentially coercive, but not paying them is potentially exploitative. Or consider a government benefit program that wants to assess clients' experiences in a survey. Even if given assurances, will clients fear that refusal to participate in the survey could jeopardize their benefits? Ensuring voluntary participation can be complicated.

QUESTION

How does the requirement of informed consent embody some of the key principles of ethical research?

Ethical Issues Depend on Research Form and Context

Although all research on human subjects shares certain common ethical issues, principles, and procedures, a great deal also depends on the type of research and the context. Data should be kept confidential, but what confidentiality means, and how one ensures it, would be much different for a statistical study using administrative health data than an in-depth interview study about sexual abuse in childhood. Issues like informed consent,

confidentiality, or the acceptable use of deception arise to different extents and in different ways depending on the form and context of the research.

As a result, in the chapters to come, we will return often to the issue of ethics in the context of discussing the various methods of social research. In particular, we will cover ethical issues and approaches for

- qualitative research, including ethical issues related to qualitative interviews, focus groups, participant observation, and existing qualitative data, on pages 97–98 in Chapter 3;

- measurement, in particular the length of questionnaires and the burden on subjects, on page 146 in Chapter 4;

- secondary data—including the confidentiality and consent issues that arise in using administrative data—public use surveys, big data, secondary qualitative data, and matching data, on pages 214–215 and 225–228 in Chapter 6;

- primary data collection, with a particular focus on the ethics of survey research, on pages 261–263 in Chapter 7;

- laboratory and controlled experiments, as well as ethical issues involved in exogenously manipulating behavior, on pages 418–419 in Chapter 11;

- randomized experiments, which by design involve denying potentially beneficial treatments to a control group, on pages 532–534 in Chapter 14; and

- quasi and natural experiments, which resemble randomized experiments but have their own unique ethical issues, on pages 575–576 in Chapter 15.

We will also return to research ethics in Chapter 16, where we look at ethical issues that arise in applying research to policy as well as give some more practical guidelines about how to navigate the IRB review process for your own research.

Conclusion: The Road Ahead

The ideas and concepts of research methods come from many different disciplines—sociology, economics, psychology, the health sciences, and education, to name only a few. As a result, research methods are less a neatly ordered landscape and more a somewhat tangled and overgrown woods. So as you travel the road ahead, we will try to clear away the brush along the way—yet still preserve the variety of ideas and concepts that you will find in the many disciplinary journals and reports of research. It might comfort you to know that even experienced researchers, talking across disciplinary boundaries, often do not understand one another because of the many dialects of research methods. This communication gap is unfortunate, of course, but it is part of the real world of research. Thus, an important skill to have, both as a researcher and as a consumer of research, is to be able to see through the tangle of terms and to get a good view of what issue or idea is really at stake.

We begin our journey in the next chapter with an introduction to *theory, models, and research questions*—the conceptual tools researchers use to think about the world and to begin to figure out how to study it.

EXERCISES

Battleship Research

1.1 You saw in this chapter how research is used in battles over controversial public policies, such as sex education or global warming. Can you think of other important policy debates in which opponents use research to support their arguments? How do research methods play a role in these debates?

Research in the Corner Office

1.2 We made the case in this chapter that the ability to judge and apply research evidence is an important qualification for top management and leadership positions. Identify this kind of position in an organization or agency in your area of interest. In what ways does the person in this job use or commission research? If possible, interview the person about the specific ways that individual uses research on the job.

Following the Trends

1.3 In your area of interest, think of an example for each of the following:
- A performance measure
- A program evaluation
- An evidence-based policy or practice

Misleading Evidence

1.4 Most studies have their critics. Search for a news article on the internet using the key words *study* and *criticized* and find one that interests you. Or find any news article that summarizes the findings of a recent study (most journalists will mention at least a few criticisms). Do the criticisms of the study have to do with misleading measurements, misleading samples, or misleading correlations? If so, explain how in your own words.

Descriptive Versus Causal Research

1.5 The distinction between descriptive and causal questions is a fundamental one in research. Think about a social problem or issue that people are talking about these days. What are some descriptive questions that research could help answer? What are some causal questions?

Ways of Knowing

1.6 Go to wikipedia.org and find an entry on a topic that you know about through personal experience, such as a sport or hobby in which you participate. You may need to restrict yourself to a short part of an entry.
a. Can you tell where the information provided comes from? (*Wikipedia* aims to have information in its entries come from authoritative sources and not primary research by the contributor or personal experience.)
b. How did cited sources learn the information? What are the various ways they could learn information?
c. Does the information agree with what you know from personal experience?
d. Is there anything you would like to add from personal experience? How do you know the information you would like to add? Could you find a citation that would satisfy *Wikipedia*'s official (though far from always met) standards?

1.7 Read an entry from the *FiveThirtyEight* blog (found at www.fivethirtyeight.com with older entries at http://fivethirtyeight.blogs.nytimes.com), such as Nate Silver's "Do Presidential Polls Break Toward Challengers?" (2012a). Using the criteria that define the scientific method, determine the extent to which the author is employing the scientific method. Find your favorite source of political commentary. To what extent is the analysis there employing the scientific method?

Ethical Research: Informed Consent and Voluntary Participation

1.8 Find a journal article or research report on a social or policy issue that interests you. Does the research use human subjects? If so, what ethical issues are involved? If not, how does the researcher explore social or policy issues without human subjects?

1.9 Think of a research question that you would like to explore by interviewing people. How can you ensure that the project satisfies the criteria of respect for persons, beneficence, and justice? What information should the informed consent document include? How would you ensure that participation is voluntary?